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(54) ALLERGEN REDUCTION BEDDING

(57)Abstract:

PROBLEM TO BE SOLVED: To provide allergen reduction fibers capable of automatically reducing allergen adhered to a fiber product without giving allergen reduction treatment and capable of recovering allergen reduction functions with easy operation.

SOLUTION: An allergen reduction component is grafted, dissolved, or distributed, solvent and/or binder and is chemically fixed on a fiber and/or after connected on a fiber in an allergen reduction bedding. It is preferable that the allergen reduction component is at least one species selected from the group consisting of an aromatic hydroxy compound; alkaline metal carbonate, alum, lauryl benzensulfonic acid, lauryl sulfate and polyoxyethylene lauryl ether sulfate; phosphate zinc sulfate and/or lead acetate.

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CLAIMS

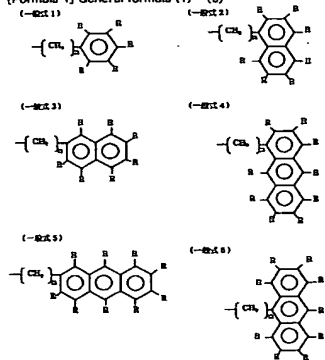
[Claim(s)]

[Claim 1] Allergen reduction-ized bedding characterized by making it come to contain an allergen reduction-ized component.

[Claim 2] Allergen reduction-ized bedding according to claim 1 with which an allergen reduction-ized component is characterized by being an aromatic series hydroxy compound.

[Claim 3] Allergen reduction-ized bedding according to claim 1 or 2 characterized by an aromatic series hydroxy compound being a compound which has at least one shown in the side chain of a linear macromolecule at following general formula (1) - (6).

[Formula 1] General formula (1) - (6)



(R is hydrogen or a hydroxyl group, at least one shows a hydroxyl group, and n shows 0-5)

[Claim 4] Allergen reduction-ized bedding according to claim 1 or 2 characterized for the monomer which has the phenolic group of the monomer in which an aromatic series hydroxy compound contains at least one shown in above-mentioned general formula (1) - (6), and/or monovalence by the polymerization or coming to copolymerize.

[Claim 5] Allergen reduction-ized bedding according to claim 1 or 2 with which an aromatic

series hydroxy compound is characterized by being an aromatic heterocycle type hydroxy compound.

[Claim 6] Allergen reduction-ized bedding according to claim 1 characterized by being at least one chosen from the group which an allergen reduction-ized component becomes from the carbonate of alkali metal, alum, a lauryl benzenesulfonic acid salt, a lauryl sulfate, and a polyoxyethylene lauryl etheral sulfate salt.

[Claim 7] Allergen reduction-ized bedding according to claim 1 with which an allergen reduction-ized component is characterized by being phosphate, and a zinc sulfate and/or lead acetate.

[Claim 8] Allergen reduction-ized bedding given in claim 1 to which an allergen reduction-ized component is characterized by fixing and/or coming to be combined chemically at the configuration fiber of bedding - 7 term any 1 term.

[Claim 9] Allergen reduction-ized bedding given in claim 1 to which an allergen reduction-ized component is characterized by fixing and/or coming to be combined chemically by the graft-ized reaction at the configuration fiber of bedding - 8 term any 1 term.

[Claim 10] the allergen reduction dissolved or distributed to the solvent and/or the binder - allergen reduction-ized bedding given in claim 1 to which a degassed part is characterized by fixing and/or coming to be combined chemically at the configuration fiber of bedding - 8 term any 1 term.

[Claim 11] Allergen reduction-ized bedding given in claim 1 characterized by coming to use for the configuration fiber of bedding the fiber raw material with which it comes to carry out copolymerization of the polymerization nature monomer which has an allergen reduction-ized component - 8 term any 1 term.

[Claim 12] the configuration fiber of bedding - allergen reduction - allergen reduction-ized bedding given in claim 1 characterized by coming to carry out spinning of a degassed part and the fiber raw material - 8 term any 1 term.

[Claim 13] Allergen reduction-ized bedding given in claim 1 characterized by allergen being the Chile Dani origin - 12 term any 1 term.

[Claim 14] Allergen reduction-ized bedding given in claim 1 characterized by recovering an allergen reduction-ized function by washing with a liquid - 13 any 1 terms.

[Claim 15] Allergen reduction-ized bedding given in claim 1 characterized by recovering an allergen reduction-ized function with heating - 13 any 1 terms.

[Claim 16] Allergen reduction-ized bedding given in claim 1 characterized by recovering an allergen reduction-ized function by drawing in with a cleaner - 13 any 1 terms.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the allergen reduction-ized bedding which has the function which reduction-izes allergen, such as Dani and pollen.

[0002]

[Description of the Prior Art] In recent years, many allergies, such as atopic dermatitis, bronchial asthma, and allergic rhinitis, is posing a problem. The main cause is for the allergen (Der1, Der2) of inside nature Acari of a dwelling and many Chile Dani especially in house dust and much allergen, such as cedar pollen allergen (Crj1, Crj2) which mainly rages in spring, to increase in a life space. Even if especially Chile Dani's allergen exterminates Chile Dani who becomes the cause, the dead insect will supply the allergenic high matter to a life space further, and it does not result in fundamental solution of the allergies from which allergen becomes a cause. Moreover, it is the glycoprotein of molecular weight abbreviation 40kDa, and Crj2 is the glycoprotein of molecular weight abbreviation 37kDa, and if Crj1 which is cedar pollen allergen adheres to the tunica mucosa nasi etc., it will be recognized as a foreign matter outside a living body, and will trigger an inflammatory response. Therefore, in order to prevent the deacutance or the new sensitization of the allergies, allergen is completely removed from a life space, or it is needed to denature allergen and to make it inactivate. Since sleep is barred and its health is ruined still more remarkably when an allergy symptom comes out, while sleeping, that especially the bedding represented by covering and the sheet of the ground, bedding, a mattress, a bolster, a bed, a blanket, etc. sides, such as bedding, a mattress, and a bolster, carries out long duration contact, for the patient with allergies, allergen reduction-ization is desired most.

[0003] On the other hand, since bedding is covered by the textile which the front face generally becomes from fiber, it is difficult for allergen to be easy to be accumulated and to clean up with a vacuum cleaner etc. easily. Moreover, these could not be soaked in water, or since they were magnitude which does not go into a washing machine for home use, could not remove allergen by wash or needed the serious effort. Then, the fixed approach of a textile and a cotton pad is also controlled by the thing and JP.7-32735.B which controlled the eye of the textile of bedding covering by JP.62-213707.A in fixed magnitude, a technique which Acari does not pass in bedding is introduced, and marketing is also actually carried out. However, although those special bedding of a textile and the sewing approach cannot pass Acari itself, the allergen which could not remove it or less [of Acari] with 1/10 since the magnitude of Dani's cadaver, stools, etc. used as allergen was small, and became scattering with the physical impact, and became still finer cannot be prevented, either. Furthermore, to the allergen in the dust dust falling on, it is ineffective in any way from the outside of not the interior of bedding but the interior of a room.

[0004]

[Problem(s) to be Solved by the Invention] This invention reduction-izes allergen adhering to bedding automatically in view of the above-mentioned trouble, without performing allergen reduction-ized processing anew, and is to offer the allergen reduction-ized bedding which can recover an allergen reduction-ized function by still simpler actuation.

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configuration fiber of bedding with allergen reduction-ized bedding given in fixing, and/or claim 1 - 8 term any 1 term which it comes to combine chemically by the graft-ized reaction, moreover, the allergen reduction which dissolved or distributed this invention according to claim 10 to the solvent and/or the binder - a degassed part provides the configuration fiber of bedding with allergen reduction-ized bedding given in fixing, and/or claim 1 - 8 term any 1 term which it comes to combine chemically, moreover, this invention according to claim 11 - allergen reduction - the fiber raw material with which it comes to carry out copolymerization of the polymerization nature monomer which has a degassed part provides with the allergen reduction-ized bedding of a publication claim 1 which it comes to use for the configuration fiber of bedding - 8 term any 1 term, moreover, this invention according to claim 12 - the configuration fiber of bedding - allergen reduction - claim 1 which comes to carry out spinning of a degassed part and the fiber raw material - 8 term any 1 term are provided with the allergen reduction-ized bedding of a publication. Moreover, this invention according to claim 13 provides with the allergen reduction-ized bedding of a publication claim 1 whose allergen is the Chile Dani origin - 12 term any 1 term. Moreover, this invention according to claim 14 provides with the allergen reduction-ized bedding of a publication claim 1 - 13 any 1 terms which an allergen reduction-ized function recovers by washing with a liquid. Moreover, this invention according to claim 15 provides with the allergen reduction-ized bedding of a publication with heating claim 1 - 13 any 1 terms which an allergen reduction-ized function recovers. Moreover, this invention according to claim 16 provides with the allergen reduction-ized bedding of a publication claim 1 - 13 any 1 terms which an allergen reduction-ized function recovers by drawing in with a cleaner.

[0006] This invention is explained below at a detail. The allergen reduction-ized bedding in this invention should just contain the allergen reduction-ized component at least in the part which is bedding. A part of a part of fiber which constitutes bedding, part (it is the ground etc. a side) which constitutes bedding, and part which constitutes bedding are not especially limited with some bedding [at least].

[0007] The bedding in this invention is used when sleeping, and covering and the sheet of the ground, bedding, a mattress, a bolster, a bed, a blanket, etc. are mentioned [general] sides, such as bedding, a mattress, and a bolster. Furthermore, foam ingredients, such as particle-like ingredients, such as buckwheat chaff which the material used for bedding is also contained in this invention, for example, is used for these, such as a cotton pad for bedding, and chaff, polyurethane, and polystyrene, etc. are mentioned.

[0008] the allergen reduction used by this invention - if a degassed part is a component which inactivates allergen and can control an antigen-antibody reaction, it is not limited especially, for example, its hydroxybenzoic acid like 2 and 5-hydroxybenzoic acid, such as a plant extract like a tannic acid and a catechin, etc. is usable.

[0009] As the above-mentioned allergen reduction-ized component, it is desirable that it is an aromatic series hydroxy compound.

[0010] Especially as the above-mentioned aromatic series hydroxy compound, it is not limited but it is desirable that it is the compound which has at least one shown in the side chain of a linear macromolecule at following general formula (1) - (6) from the point that there are few worries about the coloring to bedding especially.

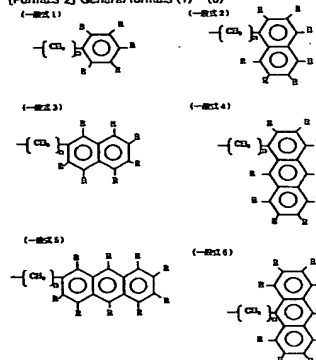
[0011]

[Formula 3] General formula (1) - (6)

[0005]

[Means for Solving the Problem] in order to attain the above-mentioned purpose - this invention according to claim 1 - allergen reduction - the allergen reduction-ized bedding characterized by making it come to contain a degassed part, moreover, this invention according to claim 2 - allergen reduction - a degassed part offers the allergen reduction-ized bedding according to claim 1 which is an aromatic series hydroxy compound. Moreover, this invention according to claim 3 offers the allergen reduction-ized bedding according to claim 1 or 2 whose aromatic series hydroxy compound is a compound which has at least one shown in the side chain of a linear macromolecule at following general formula (1) - (6).

[Formula 2] General formula (1) - (6)

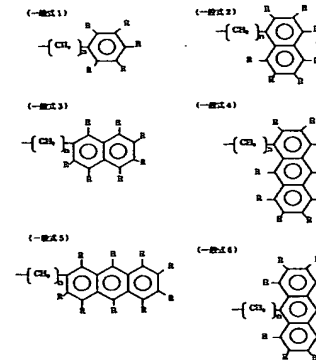


(R is hydrogen or a hydroxyl group, at least one shows a hydroxyl group, and n shows 0-5)

Moreover, this invention according to claim 4 offers a polymerization or the allergen reduction-ized bedding according to claim 1 or 2 which it comes to copolymerize for the monomer which has the phenolic group of the monomer in which an aromatic series hydroxy compound contains at least one shown in above-mentioned general formula (1) - (6), and/or monovalence. Moreover, this invention according to claim 5 offers the allergen reduction-ized bedding according to claim 1 or 2 whose aromatic series hydroxy compound is an aromatic heterocycle type hydroxy compound, moreover, this invention according to claim 6 - allergen reduction - a degassed part offers the allergen reduction-ized bedding according to claim 1 which is at least one chosen from the group which consists of the carbonate of alkali metal, alum, a lauryl benzenesulfonic acid salt, a lauryl sulfate, and a polyoxyethylene lauryl ether sulfate salt, moreover, this invention according to claim 7 - allergen reduction - a degassed part offers the allergen reduction-ized bedding according to claim 1 which is phosphate, and a zinc sulfate and/or lead acetate, moreover, this invention according to claim 8 - allergen reduction - a degassed part provides the configuration fiber of bedding with allergen reduction-ized bedding given in fixing, and/or claim 1 - 7 term any 1 term which it comes to combine chemically, moreover, this invention according to claim 9 - allergen reduction - a degassed part provides the

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(R is hydrogen or a hydroxyl group, at least one shows a hydroxyl group, and n shows 0-5)

[0012] The above-mentioned general formula (1) in the compound which has the functional group shown by (6) in the side chain of a linear macromolecule, the number of n is 0-5. When 5 is exceeded, the effectiveness which uses a linear macromolecule may be lost. Moreover, if at least one of the R is a hydroxyl group and there is no hydroxyl group, it may be unable to demonstrate allergen reduction-ized effectiveness enough. Since coloring nature may become strong when there are too many hydroxyl groups, as for a hydroxyl group, one is desirable. Moreover, as for the location of a hydroxyl group, it is desirable that steric hindrance has combined with fewest parts, for example, it is desirable in a general formula (1) that it is in the para position.

[0013] The above-mentioned linear macromolecule means things, such as a vinyl polymerization object, polyester, and a polyamide, in synthetic macromolecule. Moreover, especially about the chemical bond of the functional group and linear macromolecule which are shown by above-mentioned general formula (1) - (6), it is not limited but carbon-carbon bonding, an ester bond, ether linkage, amide association, etc. are mentioned. The above-mentioned general formula (1) As a compound which has the functional group shown by (6) in the side chain of a linear macromolecule, Pori 3 and 4, 5-hydroxybenzoic-acid vinyl, a polyvinyl phenol, the poly thyrasin, Pori (1-vinyl-5-hydroxy naphthalene), Pori (1-vinyl-6-hydroxy naphthalene), and Pori (1-vinyl-5-hydroxy anthracene) are desirable from safety or the ease of receiving, for example.

[0014] Moreover, a polymerization or the thing which it comes to copolymerize is desirable in the monomer which has the phenolic group of the monomer which contains at least one shown in above-mentioned general formula (1) - (6) as the above-mentioned aromatic series hydroxy compound, and/or monovalence.

[0015] 1 and 2- (4-hydroxyphenyl) ethene which will not be limited especially if it is the compound which the monomer which has the hydroxyl group of a piece has combined with the benzene ring more than the piece as a monomer which has the above-mentioned univalent phenolic group more than a piece, for example, is shown in a vinyl phenol, a thyrasin, and the following general formula 7 is mentioned. It is effective in being hard to discolor it compared with

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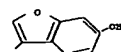
a polyhydroxy phenol, if an active phenol has a univalent phenolic group
[Formula 4] General formula (7)
(一般式 7)



[0016] As other monomers by which copolymerization is carried out to the monomer which has the above-mentioned hydroxy group more than a piece, ethylene, acrylate, methacrylate, methyl methacrylate, hydroxyethyl methacrylate, hydroxyethyl acrylate, hydroxypropyl acrylate, hydroxypropyl methacrylate, styrene, etc. are mentioned.
[0017] Moreover, as the above-mentioned aromatic series hydroxy compound, it is desirable that it is an aromatic heterocycle type hydroxy compound.
[0018] Especially the above-mentioned aromatic heterocycle type hydroxy compound is not limited, for example, a 2-hydroxy furan, a 2-hydroxy thiophene, hydroxy benzofuran, a 3-hydroxy pyridine, etc. are mentioned. Moreover, you may be a polymerization or the compound which it comes to copolymerize about the compound which contains an aromatic heterocycle type hydroxy group in the side chain of a linear macromolecule, and the monomer which has an aromatic heterocycle type hydroxy group.
[0019] What, the hydroxy group combined with heterocycle frames, such as a thiophene shown in the following general formulas 8 and 9 and a furan, as the above-mentioned aromatic heterocycle type hydroxy group, for example, the thing which the hydroxy group combined with the frame with the heterocycle shown in the following general formula 10 and an aromatic series ring, the thing which has a hydroxy group and an alkyl group (five or less carbon number) in a heterocycle frame, the thing which has a hydroxy group and an alkyl group (five or less carbon number) in a frame with heterocycle and aromatic series are mentioned.
[Formula 5] General formula (8) General formula (9) General formula (10)
(一般式 8) (一般式 9) (一般式 10)



(一般式 10)



[0020] As an allergen reduction-ized component of this invention, a carbonate, alum, a lauryl benzenesulfonic acid salt, a lauryl sulfate, a polyoxyethylene lauryl etheral sulfate salt and phosphate, and the zinc sulfate and/or lead acetate of alkali metal are preferably used from the point that there are few worries about the coloring to bedding.
[0021] As a carbonate of the above-mentioned alkali metal, the carbonate of the alkali metal of a lithium, sodium, a potassium, a rubidium, caesium, and a francium is mentioned, and they are a sodium carbonate and potassium carbonate preferably.
[0022] As the above-mentioned alum, the double salt which consists of a sulfate of univalent ion, such as alkali metal, and a thallium, ammonium, is mentioned. [an aluminum sulfate, and] Moreover, the double salt which transposed aluminum to chromium, iron, etc. is mentioned similarly. They are potassium aluminum sulfate and aluminum sodium sulfate preferably.

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Especially the high potassium aluminum sulfate of allergen reduction-ized capacity may be a partial hydrate in which a hydrate exists in the process in which a water molecule is lost gradually, although dodecahydrate (AlK(SO₄)₂·12H₂O) or an anhydride (AlK₂(SO₄)₃) is mainly used. Since some alum is specified also as the food additive and the cosmetics raw material as potassium alum, it is the matter with high safety.

[0023] As a salt of the above-mentioned lauryl benzenesulfonic acid salt, a lauryl sulfate, and a polyoxyethylene lauryl etheral sulfate salt, amine salts, such as metal salts, such as a lithium, sodium, a potassium, and magnesium, ammonium salt, and triethanolamine, are mentioned, and they are sodium salt and a triethanolamine salt especially preferably.

[0024] As the above-mentioned phosphate, when it dissolves in a drainage system solvent, a potassium dihydrogenphosphate etc. is mentioned other than a sodium dihydrogenphosphate (phosphoric-acid 1 sodium) which points out the salts which generate PO₄³⁻ ion, for example, we used for the example, a sodium hydrogenphosphate (phosphoric-acid disodium).

[0025] As the above-mentioned zinc sulfate, although a hydrate (seven hydrates) or an anhydride is mainly used, a hydrate may be a partial hydrate which exists in the process in which a water molecule is lost gradually. From ancient times, more, the zinc sulfate is known as white zinc or a zinc white, and adoption is carried out also to the Japanese pharmacopoeia. Moreover, it is a food additive, and since it is added by mother's milk substitutional food for the purpose of growth of people and supply of Zn which is a minute amount metallic element indispensable to health maintenance, safety is high.

[0026] The above-mentioned lead acetate may be a partial hydrate in which a hydrate exists in the process in which a water molecule is lost gradually, although a hydrate (three hydrates) or an anhydride is used. From ancient times, more, the above-mentioned lead acetate is known as sugar of lead, and adoption is carried out also to the Japanese pharmacopoeia.

[0027] The allergen reduction-ized bedding of this invention — the above-mentioned allergen reduction — a degassed part may be used or more combining two that what is necessary is to just be blended as at least one active principle.

[0028] The allergen reduction blended with the allergen reduction-ized bedding of this invention — 0.1 — 300% of the weight of the thing which it comes out comparatively and is blended to the configuration fiber of bedding as a degassed amount is desirable, further — desirable — 0.2 — 100 % of the weight — comparatively — especially — desirable — 0.5 — 50 % of the weight — it comes out comparatively, if it is less than 0.1 % of the weight, and it may become difficult to demonstrate allergen reduction-ized effectiveness and it exceeds 300 % of the weight, a surface layer becomes weak firmly, the fall on physical properties may be unable to be caused, or omission from fiber etc. may become easy, the effectiveness expected may be unable to be expected, or dirt of the circumference by the omission object may be seen and the need for cleaning may come out.

[0029] Although it is not limited but the thing of any materials and a gestalt is used especially as configuration fiber of the bedding of this invention inside — allergen reduction — for fiber a degassed part as fixing and/or a chemically combinable thing. For example, a polyester system, a polyamide system, a polyolefine (nylon etc.) system, Natural fibers, such as regenerated fibers, such as semi-synthetic fibers, such as synthetic fibers, such as the Pori acrylic, and acetate, cuprammonium rayon, and rayon, cotton, hemp, wool, and silk, or the compound-ized fiber of each [these] fiber, cotton-mixing, etc. can be used. Moreover, as long as it is used for textiles and gets as a gestalt of fiber, the thing of any gestalten can be used, for example, any, such as yarn, textile fabrics, and a nonwoven fabric, may be used.

[0030] In an allergen reduction-ized component, especially as fixing and/or an approach of combining chemically, it is not limited by the configuration fiber of bedding, for example, the approach using a graft-ized reaction, a solvent, and/or a binder etc. is mentioned so it is in addition, the allergen reduction which carries out the following — the number of fixing and/or the approaches of combining chemically is not one about a degassed part at the configuration fiber of bedding, and it is good in a multi-line.

[0031] Especially as the above-mentioned graft-ized reaction, it is not limited, for example, the following approaches are mentioned.

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1) graft polymerization method: — the trunk polymer used as fiber — a polymerization start point — building — allergen reduction — the approach of carrying out the polymerization of the monomer which forms the branch polymer which is a degassed part.
2) Coupling process (macromolecule reaction): how to combine with a trunk polymer the branch polymer which is the allergen reduction-ized component prepared in advance by the macromolecule reaction.
[0032] Especially as a describing [above] graft polymerization method, it is not limited, for example, the following approaches are mentioned.
(1) How to use the chain transfer reaction to fiber, and generate and carry out the polymerization of the radical.
(2) How to make reducibility matter like alcohol, a thiol, and an amine the 2nd cerium salt, a silver sulfate salt, etc. oct, to form an oxidation reduction system (redox system), to generate a free radical for fiber, and to perform a polymerization.
(3) How to irradiate only the approach of irradiating by making fiber and a monomer live together, or fiber using a gamma ray or an acceleration electron ray, to add a monomer behind, and to perform a polymerization.
(4) How to make this a polymerization start point and carry out [oxidizes a trunk polymer and carries out diazo installation of the peroxy group from the amino group of installation or a side chain, and] a polymerization.
(5) How to use polymerization initiation reactions, such as epoxy by the active group of side chains, such as a hydroxyl group, an amino group, and a carbonyl group, a lactam, and a polar vinyl monomer.
[0033] Specifically, the following approaches are mentioned: a) How to make a free radical generate and to perform graft polymerization by grinding a cellulose in a vinyl monomer. b) How to perform graft polymerization using celluloses (for example, mercapto ethyl cellulose etc.) with a vinyl monomer and the radical which is easy to receive chain transfer as fiber. c) How to perform graft polymerization by the approach of oxidizing ozone and a peroxide and making a radical generating. d) How to introduce double bonds, such as the allyl compound ether, vinyl ether, or methacrylic ester, into the side chain of a cellulose, and to perform graft polymerization. e) How to irradiate ultraviolet rays, using Anthraquinone -2, 7-disulfon acid sodium, etc. as a photosensitizer, and to perform graft polymerization. f) How to give an electrochemistry target graft polymerization by winding fiber equipments around the surroundings of a cathode, adding a monomer into a dilute sulfuric acid, and applying foreign voltage. It is the approach of carrying out graft polymerization by heating preferably the fiber which applied glycidyl methacrylate (GMA) and a benzoyl peroxide in a monomer solution, if it takes into consideration that it is the graft polymerization to fiber especially. h) A monomer is added to the liquid which distributed a benzoyl peroxide, the Nonionic-anion mold surface active agent, and mono-chlorobenzene to water, and the method of being immersed, heating polyester fiber as fiber, and performing graft polymerization etc. is used.
[0034] Especially as the above-mentioned coupling approach, it is not limited but a general approach can be used. For example, the substitution reaction to esterification, etherification, acetalization, ester group, and amide group of the chain transfer reaction and the oxidation reaction to (1) C-H, the addition reaction to a substitution reaction (2) double bond, and an oxidation reaction (3) hydroxyl group, an addition reaction, a hydrolysis reaction, the substitution reaction to a hydrogen radical, the substitution reaction (halogenation, nitration, sulfonation, chloromethylation) to an elimination reaction (4) ring, etc. are mentioned.
[0035] The allergen reduction used for the above-mentioned graft-ized reaction — a degassed part — the above-mentioned allergen reduction — if it is the monomer which added reactivity or polymerization nature to a degassed part, especially, it is not limited but can be used. An aromatic series hydroxy compound is used preferably especially.
[0036] The allergen reduction which dissolved or distributed the allergen reduction-ized bedding in this invention to the solvent and/or the binder — the configuration fiber of bedding obtains a degassed part also by fixing and/or the approach of combining chemically as the above-mentioned solvent — allergen reduction — if the thing which can dissolve or distribute a

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degassed part, or a binder can be dissolved, it will not be limited especially, for example, water, alcohols, hydrocarbons (methyl alcohol, ethyl alcohol, propyl alcohol, etc.) (toluene, a xylene, a methylnaphthalene, kerosene, cyclohexane, etc.), ether (diethylether, a tetrahydrofuran, dioxane, etc.), ketones, and amides (an acetone, methyl ethyl ketone, etc.) (N,N-dimethylformamide etc.) will be mentioned.

[0037] As the above-mentioned binder, if an allergen reduction-ized agent can be fixed on a fiber front face, as a binder which is not limited especially, for example, consists of synthetic resin, 1 liquid type urethane resin, 2 liquid type urethane resin, acrylic resin, urethane acrylate resin, polyester resin, an unsaturated polyester resin, an alkyl resin, vinyl acetate resin, vinyl chloride resin, an epoxy resin, epoxy acrylate resin, etc. will be mentioned. In the case of a liquid condition, a binder may be used in the condition as it is, or may add the above-mentioned solvent. In the case of a solid state, you may use it in the condition of having dissolved or distributed to the above-mentioned solvent. Moreover, the above-mentioned solvent and a binder may be used independently, and may use two or more sorts together.

[0038] The solution with which the above-mentioned allergen reduction-ized component is dissolved or distributed by the solvent and/or the binder (it may be hereafter described as a combining chemically, it limits to the configuration fiber of bedding to fiber — not having — fiber — reduction — a degassed part — content — a solution — even if immersed — reduction — a degassed part — content — a solution — even if it makes it fiber spreading and coating — reduction — a degassed part — content — a solution — it does not matter even if it applies to fiber with a spray.

[0039] A fiber raw material according to claim 11 — allergen reduction — copolymerization of the polymerization nature monomer used as the polymerization nature monomer which has a degassed part, and a common fiber raw material is carried out. said allergen reduction — the polymerization nature monomer which has a degassed part — the above-mentioned allergen reduction — it will not be limited especially if it is the monomer which added polymerization nature to a degassed part.

[0040] The allergen reduction obtained by claim 11 with the fiber raw material used by claim 12 — the fiber raw material and/or the common fiber raw material which have a degassed part as it is usually used as fiber, being processed, the above-mentioned general fiber raw material is not limited especially, for example, regenerated fiber raw materials, such as semi-synthetic fiber raw materials, such as synthetic-fiber raw materials, such as polyamide systems (nylon etc.), acrylic, a polyvinylidene chloride system, a polyvinyl chloride system, a polycarbonate system, a polyester system, a polyolefine system, and a polyurethane (polyethylene, polypropylene, etc.) system, and acetate, cuprammonium rayon, and rayon, a natural fiber, etc. can be used for it.

[0041] In addition — further — the above-mentioned allergen reduction — the approach of acquiring by mixing or ****(ing) and carrying out spinning of the fiber raw material containing a degassed part and the common fiber raw material may be used.

[0042] As an approach of copolymerizing the polymerization nature monomer used as the above-mentioned allergen reduction-ized component and a fiber raw material, what kind of approach may be used, for example, condensation reactions, such as hydrogen transfer polymerization, such as addition reactions, such as vinyl polymerization, cyclopolymerization, and ring opening polymerization, a transition polymerization and isomerization polymerization, an oxidation polymerization, a denitrification polymerization, a decarboxylation polymerization, a polycondensation, and addition condensation, etc. are mentioned.

[0043] The allergen reduction used for the above-mentioned copolymerization reaction — a degassed part described above — as — allergen reduction — if it is the monomer which added polymerization nature to a degassed part, especially, it is not limited but can be used. An aromatic series hydroxy compound is used preferably especially.

[0044] Allergen reduction — especially as an approach of carrying out spinning of a degassed part and the fiber raw material (a common fiber raw material and allergen reduction — a degassed part — content — fiber — a raw material), it is not limited but the following

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approaches are mentioned.

1) melt-spinning method, for example, the fiber raw material to fuse, -- setting -- after heating melting of a fiber raw material, and the decomposition point -- the allergen reduction more than the heating melting point of the fiber raw material -- the approach of scouring a degassed part, making melting mixed liquor, making extrude and carry out cooling solidification into inactive cooling media (for example, air, nitrogen water, etc.) through a spinneret with the pore of a request of this, and making it into fiber. 2) wet spinning method, for example, a fiber raw material, -- a solvent -- dissolving -- a solution -- carrying out -- allergen reduction -- how to solidify the macromolecule which was distribution-mixed, or dissolved a degassed part (spinning undiluted solution), extruded this through the spinneret in the liquid which carries out (playback coagulation of the macromolecule, and has melted into the spinning undiluted solution fibrous. 3) spinning [dryly] method, for example, a fiber raw material, -- an volatile solvent -- dissolving -- allergen reduction -- the approach of distribution-mixing, or dissolving a degassed part, considering as a spinning undiluted solution, extruding this in a heating gas through a mouthpiece, evaporating the solvent in a spinning undiluted solution, and solidifying fibrous. The three above-mentioned approaches are used widely industrially, and can be properly used with the allergen reduction-ized bedding made into the purpose.

[0045] furthermore -- as approaches other than the above -- the emulsion (suspension --) of a 4 emulsion-spinning method: fiber raw material Distribution-mix, or dissolve a degassed part and it considers as a spinning undiluted solution, a slurry -- making -- allergen reduction -- Distribution-mix or it dissolves, the approach of carrying out spinning of this according to a wet spinning method or the spinning [dryly] method, and 5 conjugate-spinning method: -- fiber raw material melting of two or more components fused separately -- the inside of the body -- allergen reduction -- a degassed part. Or the approach of using the allergen reduction-ized component itself as a melting object, compounding these melting object just before a spinneret, and spinning to coincidence, the approach of making a high polymer fibrous, without using six spinnerets: for example allergen reduction -- the allergen reduction of the shape of an approach and a rod which cuts thinly, is extended and carries out heat setting to length further after extending the thin film containing a degassed part -- the approach of extending the high polymer containing a degassed part to altitude, the approach by the interfacial polymerization, etc. may be used.

[0046] The thing allergen reduction-ized bedding in this invention can recover an allergen reduction-ized function by various approaches. recovery of an allergen reduction-ized function -- the configuration fiber of bedding -- fixing and/or the allergen reduction combined chemically -- when a degassed part loses the reduction-ized function by contact to repeated allergen, it says enabling it to demonstrate an allergen reduction-ized function again. the reduction which uses inactivation of allergen -- a degassed class -- allergen and reduction -- a degassed reaction -- reduction -- the case where a degassed part is consumed, and reduction -- a degassed part acts in catalyst and is considered [that allergen may be inactivated and], for this reason, reduction -- the reduction which exists in the interior of fiber in order to carry out (degassed) functional recovery (reduction -- a degassed part is taken out to a fiber front face) -- the method of removing the inactivation allergen which the front face was made to carry out bleed out of a degassed part, or deposited it on the front face of reduction-ized fiber etc. is mentioned.

[0047] As the above-mentioned method of recovery in this invention, the approach of washing bedding with a liquid, the method of heating bedding, the approach of attracting bedding with a cleaner, etc. are mentioned, for example. As a liquid in which it is used for washing of the above-mentioned bedding, and deals, if damage is not done to the bedding itself, it will not be limited especially, for example, water, alcohols, hydrocarbons (methyl alcohol, ethyl alcohol, propyl alcohol, etc.) (toluene, a xylene, a methylphenyltoluene, kerosene, cyclohexane, etc.), ether (diethylether, a tetrahydrofuran, dioxane, etc.), ketones, and amides (an acetone, methyl ethyl ketone, etc.) (N,N-dimethylformamide etc. will be mentioned. Water and alcohol are preferably used from the point referred to as being able to process easily also at home inside or simple. Moreover, in order to heighten the above-mentioned cleaning effect, the surfactant generally

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section was carried out as a solvent, and fiber processing liquid was prepared.) The spray was carried out to homogeneity so that it might become a polyester nonwoven fabric (100g of eyes/, m2) with 20microl/cm2, at the room temperature, processing liquid is left for 8 hours, and was dried, and the allergen reduction-ized textile was obtained. Bedding covering was produced using the obtained textile.

[0055] (Example 3) The potassium-aluminum-sulfate (Wako Pure Chem reagent: first-class specification) 10 weight section was dissolved in the ethyl alcohol (Nakarai Tesoku make: first-class specification) 45 weight section and the purified water 45 weight section as a solvent, and fiber processing liquid was prepared. The spray was carried out to homogeneity so that it might become a polyester nonwoven fabric (100g of eyes/, m2) with 10microl/cm2, at the room temperature, processing liquid is left for 8 hours, and was dried, and the allergen reduction-ized textile was obtained. Bedding covering was produced using the obtained textile.

[0056] (Example 4) The polyethylene terephthalate (henceforth, PET) ([limiting viscosity eta] =0.65) 100 weight section and the PORIPA rabbi nil phenol "mul Chinese quince car M" (Maruzen Petrochemical Co., Ltd. make) (weight-average-molecular-weight Mw=3500) 100 weight section were kneaded on the conditions for 20 minutes by 250 degrees C using the pressurized kneader. It extruded with the screw mold 1 shaft extrusion vessel after kneading, and cast to the pellet type. Spinning of this pellet was carried out by the melt spinning method (the filter of the pack in spinning is 270 meshes), and it extended, and rinsed, and it dried and the allergen reduction-ized textile was obtained. Bedding covering was produced using the obtained textile.

[0057] (Example 1 of a comparison) The same PET weaving as what was used in the example 1 was used without performing allergen reduction-ized processing, and bedding covering was produced.

[0058] (Example 2 of a comparison) The same polyester nonwoven fabric (100g of eyes/, m2) as what was used in the example 2 was used without performing allergen reduction-ized processing, and bedding covering was produced.

[0059] (Example 3 of a comparison) Polyethylene terephthalate (henceforth, PET) ([limiting viscosity eta] =0.65) was extruded with the screw mold 1 shaft extrusion vessel, and was cast to the pellet type. Spinning of this pellet was carried out like the example 1 (the filter of the pack in spinning is 270 meshes), it was extended, and was rinsed, it dried and the textile was obtained. Bedding covering was produced using the obtained textile.

[0060] It was used by [each] bedding covering obtained in the [allergen reduction-ized evaluation] examples 1-4 and the examples 1-3 of a comparison, and 10 [g], and the piece of an evaluation cloth (33cmx30cm) was produced. 1ml of preparation allergen which made the ethyl alcohol 50 weight section and the purified water 50 weight section distribute the dust dust (allergen 2 mg/g) 5 weight section was scattered to the piece of an evaluation cloth, and the piece for evaluation of cloth was adjusted to it.

It measured allergenic for the above-mentioned piece for evaluation of cloth after 8-hour neglect using the allergen judging kit "a tick scan" (the Asahi Breweries chemical company make) at the [evaluation approach (1)] room temperature. The judgment followed the directions for use of a "tick scan." A result is shown in Table 1. The criterion of a tick scan is as follows

- 1 There is no contamination of tick allergen (test line T=0).
- 2 It is polluted a little with tick allergen (T=C control line)
- 3 It is polluted with tick allergen (T=C)
- 4 It is polluted very much (T=O)

[0061] According to the kit of a "my tea checker" (SHKINTO fine company make), the allergen component was extracted for the above-mentioned piece for evaluation of cloth 2 hours after at the [evaluation approach (2)] room temperature, and the amount of allergen was measured. A result is shown in Table 1. A my tea checker's criterion is as follows --. It is tick allergen level $\times 15 \text{ mg/mg/m}^2$ Tick allergen level 10microg/m2** Tick allergen level 5microg/m2- Tick allergen level 2microg/m2 [0062] [Table 1]

used may be used.

[0048] The approach of the temperature which heats the above-mentioned bedding not being limited especially, and any approaches being used for it as the above-mentioned heating approach if damage is not done to the bedding itself, for example, heating the bedding itself, the approach of heating and washing the above-mentioned solvent, the approach of heating by sunlight, etc. are mentioned.

[0049] furthermore -- this invention -- reduction -- in order that a degassed part may act smoothly to allergen and may heighten reduction-ized effectiveness, it is desirable to contain the hydrophobic component on bedding. As the above-mentioned approach, the approach using the approach of copolymerizing a hydrophobic monomer etc. is mentioned, for example. Such a hydrophobic monomer especially is not limited, for example, vinyl acetate, 2-hydroxyethyl methacrylate (HEMA), etc. are mentioned. Moreover, when fixing on bedding using a solvent or a binder, the approach of adding and using the hydrophobic matter into it is mentioned. As such hydrophobic matter, a cellulose, polyvinyl alcohol, etc. are mentioned, for example. Moreover, the approach of using the high fiber of hygroscopicity and absorptivity for fiber etc. is mentioned.

[0050] On the allergen reduction-ized bedding of this invention, in the range which does not check the effectiveness of allergen reduction-ized effectiveness, adjuvants for pharmaceutical preparation, such as a wetting agent, an antioxidant, and an ultraviolet ray absorbent, may be blended, and miticide, the germicide, the antifungal agent, the deodorant, etc. may contain.

[0051] Vegetable allergen, such as animal allergen and pollen, is mentioned as target allergen [bedding / of this invention / allergen reduction-ized]. The allergen reduction-ized component of this invention reduction-izes allergen in contact with the bedding of this invention by suppressing a reaction with the specific antibody of such allergen. As animal allergen with especially effectiveness, it is the allergen (it is the living thing of Acari and Arthropoda 1 Arachnida-Acarina, and mainly divided into seven suborders.) of Acari. The back spracle represented by reed NAGADANI, four spracles represented by KATADANI, the Yamato tick, The posterior spracle represented by TSUBAMEHIMEDANI, a house dust mite, a spracle while tin mass SHIDANI representation is carried out, apneustic (which is represented by the front spracle represented by stag beetle paw ticks and NAMHOKORIDANI, the Tyrophagus putrescentiae, and Dermatophagoides farinae), IESASARADANI, and KAZARI -- a skin, although it can be applicable by any classes, such as ***** represented by ticks Effectiveness is in the department of Chile Dani and Epidermoptidae which cause allergosis mostly especially on bedding among house dust.

[0052]

[Embodiment of the Invention] Although an example is given to below and this invention is further explained to a detail, this invention is not limited only to these examples.

[0053] The benzoylperoxide (reagent by sigma ARUDO rich company: 75% first class specification of purity) 1 weight section, (Example 1) The anionic surfactant "EMARU 2F needle" (Kao [Corp.] make: active principle or 90% of solid content) 1 weight section, The 4-vinyl phenol (made in Lancaster: 10% propylene glycol solution of purity) 100 weight section was added to the aqueous emulsification dispersion liquid of the chlorobenzene (reagent by sigma ARUDO rich company: 99.5% best specification of purity) 10 weight section, and the purified water 1000 weight section, and fiber processing liquid was adjusted to them. The cloth 20 weight section made from PET (polyethylene terephthalate) was immersed into fiber processing liquid, it heated for 60 minutes at 100 degrees C, and graft polymerization was performed. Then, the extract was performed for this PET weaving for 30 minutes in 100-degree-C purified water, and it rinsed after 30-minute neutralization processing at 50 degrees C with the sodium-carbonate water solution 0.5 mole%, it dried, and the allergen reduction-ized textile was obtained. Bedding covering was produced using the obtained textile.

[0054] (Example 2) Poly tyrosin (INC biochemicals company make: an ethyl acrylate, the methyl-methacrylate "OIDORAGITTO NE30 copolymer D" (product made from Rohm Pharma: 30% of solid content) 2 weight section, and the Nonion system surfactant "emulgen 911" (Kao Corp. make) 0.3 weight section were carried out as the weight-average-molecular-weight (Mw=18000-36000) 2 weight section and a binder, mixed stirring of the purified water 100 weight

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	評価1	評価2
実施例1	1	-
実施例2	2	±
実施例3	1	-
実施例4	1	-
比較例1	4	++
比較例2	4	++
比較例3	4	++

[0063]

[Effect of the Invention] The allergen reduction-ized bedding of this invention can live comfortably, without the patient who holds the allergosis also causing an allergy symptom, since allergen reduction-ized processing is performed to fiber itself, moreover, the bedding polluted by allergen -- reduction -- time and effort, such as carrying out after treatment of a degassed part, is not applied. Furthermore, even if it is the case where an allergen reduction-ized function fails, an allergen reduction-ized function can be semipermanently demonstrated from a reduction-ized function being recovered by simple actuation.

[Translation done.]